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Long-lived photon echo in doped nanocrystals

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Abstract

The possibility of increase of the information storage time in optical memory devices based on the long-lived photon echo in rare-earth ion doped crystals provided that the latter are nanometer ones is analyzed. Taking into account that in such materials the information storage time is determined by the population lifetimes of hyperfine subleveis of a ground electron state it is possible to increase it due to the modification of phonon density of states in nanocrystals as compared to bulk crystals.

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Keywords

Long-lived photon echo, Nanocrystal, Optical memory